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This document was submitted to EPA by a registrant in connection with EPA's evaluation of this chemical and it is presented here exactly as submitted.

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Ethion Risk Mitigation Proposal

For Discussion at Joint Meeting
Environmental Protection Agency and FMC Corporation
January 25, 1995

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- Attachment I. Ethion Risk Mitigation Proposal.
- Attachment II. EFED Position on Ethion Mitigation Measures.
Received from EPA 01/11/95.
- Attachment III. Letter FMC Corporation to EPA dated 12/16/94.

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Attachment I.

Ethion Risk Mitigation Proposal

For Discussion at Joint Meeting
Environmental Protection Agency and FMC Corporation
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I. Identification

Active Ingredient/Formulated Product:

Reregistration Case Number/Name: 0090 - Ethion
Chemical Number/Name: 058401 - Ethion
Registrant Number: 279

Ethion 4 Miscible Insecticide/Miticide
EPA Reg. No. 279-1254

Crops/Pests Covered by this Proposal:

Grapefruit, Oranges, Lemons, Limes, Tangelos, Tangerines.

For control of: Citrus Rust Mite, Citrus Red Mite, Sixspotted Mite, Texas Citrus Mite, Snow Scale, Black Scale, Brown Soft Scale, California Red Scale, Chaff Scale, Florida Red Scale, Glover Scale, Purple Scale, Yellow Scale, Citrus Whitefly, Citrus Blackfly, Orchid Thrips, Greenhouse Thrips.

II. Mitigation Proposal

A. Source Reduction Measures:

(1) Application Rate:

Current: 5-6 pints/A (equivalent to 2.5- 3.0 lbs. ai/A)

For Discussion: 5 pints/A (2.5 lbs. ai/A) *to keep residual control*

(2) Number of Applications:

Current: Three applications with a maximum of 9.0 lbs. ai/A/year.

For Discussion: Would consider three applications with a maximum of 7.5 lbs. ai/A/year.

(3) Application Interval:

Current: No less than 90 day spray intervals.

For Discussion: Would consider greater than 90 day spray intervals.

(4) Application Spray Volume:

Current: Minimum of 250 gallons of water/A.

For Discussion: To consider 100 gallons of water/A.

(5) Canceled Uses:

Current: Citrus use only.

Propose to maintain use as currently labelled.

(6) Geographic Restrictions:

Current: Florida and Texas only.

Propose to maintain use in Florida and Texas only as currently labelled.

*Some where
between 140
145*

*Real + low
because it make
this more could
more*

Have been discussed

B. Other Mitigation Measures:

a. Spray Drift Reduction

- (1) Propose prohibiting aerial applications.
 - ✓ Propose restricting use to airblast applications only.
- (2) Following for consideration is draft label language for spray drift precautions:
 - (a) Do not apply by ground equipment within 25 feet of lakes, resevoirs, rivers, permanent streams, marshes or natural ponds, and estuaries.
 - (b) Use the largest droplet size consistent with good pest control. Formation of very small droplets may be minimized by appropriate nozzle selection and by orienting nozzles to minimize spray drift.
 - (c) Make ground applications when the wind velocity favors on target product deposition (approximately 3 to 10 mph). Do not apply when wind velocity exceeds ~~15~~ 15 mph.
 - (d) Risk of exposure to sensitive aquatic areas can be reduced by avoiding applications when wind direction is toward the aquatic area.
 - (e) Spray the last three rows using nozzles on one side only, with the spray directed into the grove. Shut off nozzles on the side away from the grove when spraying the outside rows. Shut off spray nozzles when turning at ends of rows.
 - (f) Do not cultivate within 10 feet of the aquatic area so as to allow growth of a vegetative filter strip.
 - (g) Low humidity and high temperatures increase the evaporation rate of spray droplets and therefore the likelihood of increased spray drift to aquatic areas. Avoid spraying during conditions of low humidity and/or high temperature.
 - (h) Do not make ground applications during temperature inversions. Inversions are characterized by stable air and increasing temperatures with height above the ground. Mist or fog may indicate the presence of an inversion in humid areas. The applicator may detect the presence of an inversion by producing smoke and observing a smoke layer near the ground surface.

III. Educational Program

An educational program in cooperation with State lead agencies could be developed to promote proper and effective application procedures in order to:

- 1) minimize spray drift in relation to environmental safety precautions; and
- 2) maximize currently endorsed pest control practices.

Ethion Mitigation Measures

The following summarizes EFED's position regarding possible mitigation measures for ethion, and responds to FMC's most recent proposal dated 12/16/94.

1) The bottom line is that Ethion is very highly toxic to aquatic organisms and moderately persistent. It has significant potential to cause acute effects to aquatic invertebrates and chronic effects to fish. Much of the use is in Florida on citrus where the aquatic problems are likely to be exacerbated. In addition there are chronic avian concerns at use rates over 1 lb/acre.

2) Our recommendation has been and remains that if this use is allowed to continue, all restrictions on spray drift which are possible should be utilized to address the aquatic problem. For this problem as well as the avian chronic concern, use rates must be reduced to their absolute lowest possible level. However, it should be recognized that the effectiveness of mitigation is limited by the extreme toxicity of this chemical.

The recent response from FMC listed several options which were very generally outlined. Most appeared to apply to aerial application which EFED is recommending be prohibited. Areas which would aid in mitigation of hazard from airblast application are label guidance requiring sensitive area avoidance, vegetative strips (with certain vegetation height qualifications, that is, trees to intercept spray drift), wind direction, and other "orchard periphery specifications".

The three proposed application rate changes do not reduce potential environmental hazard adequately. The reduction of seasonal limits from 9 to 8 lbs ai/Acre and reducing to three the total seasonal applications permitted do not address the major concern that a single application at 1 lb ai/Acre exceeds avian chronic hazard levels of 75-150 ppm on vegetation. A 2% drift from a 1 lb ai/Acre application exceeds chronic concern levels for fish. A 0.005% drift from a 1 lb ai/Acre application exceed acute concerns for aquatic invertebrates.

3) We suggest pursuing the following mitigation:

- i. Prohibit the use of aerial (from aircraft) application.
- ii. Prohibit use in the flatwoods area where canals running through the fields drain directly into surface water.
- iii. Reduce all application rates to 1 lb ai/A or less (per application) for reasons explained above. Extend application intervals to 2x the field dissipation halflives seen in the Florida study (68-83 days x 2) in order to allow adequate degradation of residues before more are added to residues resulting from the first application.

- iv. A major educational program implemented through restricted use and including close coordination with the Florida land and water management programs already in place. Identify IPM programs in place and develop specific application based procedures in cooperation with agricultural extension agents and extension engineers.
- v. In addition to the usual air blast restrictions to reduce drift, at a minimum, the following additional restrictions on airblast application:
 - a) Spray the outside three rows only from outside the planting. Spray last three rows using nozzles on one side only, with spray directed into the orchard. Shut off nozzles on the side away from the grove when spraying the outside rows. Shut off spray when turning at ends of rows and passing tree gaps in rows.
 - b) Do not apply when wind is blowing toward natural bodies of water or wetlands regardless of wind speed. Apply only when the wind direction is away from sensitive areas.
 - c) Orchard periphery restrictions, which should be proposed and defended by the registrant, based on their analysis of the spray drift task force results and the toxicity of this chemical.

4) Additional Data:

It is likely that sediment contamination will be a problem, therefore, sediment toxicity tests may be required and should be considered by the registrant.

5) In view of the likelihood of risk remaining high after all mitigation has been considered, we suggest that a full risk/benefit analysis be done for this chemical. There are many alternatives for this use, and while they all seem to have high environmental risks, ethion and vendex are among the worst.

Part of the citrus problem appears to be that these highly toxic chemicals are simply rotated throughout the growing season, so that restrictions on one alone do not adequately address the overall problem. It has also been repeatedly pointed out that 85-90% of the crop is treated for rust mites to prepare it for sale for the table, while only 20% of the fruit reaches this market (the rest goes for juice where the skin imperfections don't matter).

6) Require the registrant to submit their mitigation proposal in the required format (copies will be distributed at the meeting), as described in the EFED mitigation recommendations guidance paper.

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